

Carilion Riverwalk Parking Garage Roanoke, Virginia



Description: Five level parking deck with column loads up to 1,330 kips.

Subsurface Conditions: Rubble/debris fill and loose alluvial soils to a depth of approximately 20 feet, underlain by very dense alluvial soils with cobbles and boulders and limestone bedrock.

Design Details: Deep foundation systems, including driven piles and caissons, considered for the project were not cost effective since they would require drilling through the fill and very dense alluvial soils terminating in the bedrock with potential for cost overruns in the karst terrain. *Geopier*® elements supporting spread footings designed for an allowable bearing pressure of 6,000 psf were found to be the most cost effective solution. *Geopier* elements were designed to provide settlement control for column loads up to 1,330 kips. *Geopier* elements generally extended 13 and 24 feet through the fill and loose alluvium and terminated in the very dense alluvial layer. The approach minimized risk of cost overruns and saved time and money compared to the alternative solutions.

Geopier Licensee: GeoStructures, Inc., Leesburg, VA

General Contractor: Beers Skanska, Inc., Winston-Salem, NC

Owner: Carilion Health System, Roanoke, VA

Geotechnical Engineer: Froehling & Robertson, Inc., Roanoke, VA

Structural Engineer: Carl Walker Parking Consultants, Atlanta, GA

Reference: Mr. Andrew Frank, P.E., Froehling & Robertson, Inc. (540) 344-7939

Mr. James Goff, Skanska USA Building, Inc. (336) 759-7800